ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Invertebrate Abstract **Element Code:** IMGASJ0180
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Pyrgulopsis glandulosa*
COMMON NAME: Verde Rim Springsnail
SYNONYMS: *P. glandulosus*
FAMILY: Hydrobiidae

AUTHOR, PLACE OF PUBLICATION: R. Hershler, and J.J. Landye. 1988. Arizona Hydrobiidae (Prosobranchia: Rissoacea). Smithsonian Contributions to Zoology. Number 459.

TYPE LOCALITY: Nelson Place Spring, Yavapai County, Arizona.

TYPE SPECIMEN: Holotype: USNM 859047. Landye and Edwards, 28 September 1973.

TAXONOMIC UNIQUENESS: This genus comprises 35 described species and an additional 20-25 undescribed species in the Southwest.

DESCRIPTION: Shell white to transparent; periostracum (layer of chitin covering the outer portion of shell) is light brown and thin, covering much of shell surface or absent. Shell about a third taller than wide. Whorls are 3.5 to 4.0 in number, convex and slightly shouldered, sutures (line where spirals have contact) slightly impressed. The shell height is 2.0-2.8 mm. The snout is longer than wide, fairly thickened, and terminating distally with fleshy lips. Cephalic tentacles narrow, slightly less than twice as long as snout, somewhat expanded at tips. Dorsal penial surface with at least two elongate ridges, ventral surface with two accessory crests. All hydrobioids have a foot with a rounded posterior end. Females larger than males.

AIDS TO IDENTIFICATION: Due to animal's small size, it cannot be identified to species in the field but must be identified in a laboratory by a qualified authority. To obtain specimens, sift sand believed to contain the snail through ordinary kitchen strainer. Rule of thumb that spring snail species are specific to a particular location (i.e. a single spring or group of springs connected or close to each other), may be used as a means of preliminary identification. Based on penial morphology, this species is most similar to *P. montezumensis*, which also occurs in Verde River drainage, but differs in having a larger penis.

ILLUSTRATIONS: Photographs of shells (Hershler and Landye, 1988)

Line drawings (Hershler and Landye, 1988)
Scanning electron microscope (SEM) micrographs of penis and cephalic tentacles (Hershler and Landye, 1988)
SEM micrographs of radula (Hershler and Landye, 1988)
Line drawings (Hershler and Ponder, 1998)

TOTAL RANGE: Nelson Place Spring complex, consisting of two springs, separated by 150 meters, that form the headwaters of Sycamore Creek, Yavapai County, central Arizona.

RANGE WITHIN ARIZONA: See "**Total Range.**"

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The hydrobioid digestive system is typical of style-bearing neotaenioglossans. The mouth opens to a short oral area containing a pair of dorsolateral chitinous jaws composed of small, simple rodlets, immediately behind which is a well-developed buccal mass (situated within the snout). A pair of simple, unbranched, tubular salivary glands opens anterodorsally to the buccal cavity and (almost always) pass posteriorly over the nerve ring, rarely stopping short of the ring, but never passing through it in hydrobioids. Hydrobioids have a taenioglossate radula (i.e., seven teeth per row) comprising numerous rows of cuspate teeth, each of which includes a typically squarish or trapezoidal central tooth flanked on each side by lateral, inner marginal, and outer marginal teeth. Teeth near the anterior end of the radula are often worn or broken, whereas the proximal portion of the ribbon has several to many rows of poorly differentiated or incompletely formed teeth. (Hershler and Ponder, 1998).

REPRODUCTION: Most hydrobioids are oviparous, with females depositing small egg capsules, either singly or (rarely) in strings, on the substrate. A small number of hydrobioids are ovoviviparous, in which female's brood shelled young in the pallial gonoduct. Hydrobioid egg capsules are typically hemispherical to spherical. Copulation in hydrobioids is usually via an anterior opening to the glandular oviduct. The ventral channel may be traversed at least in part by the penis, but it is more likely that the penis only enters the anterior most section. (Hershler and Ponder, 1998).

FOOD HABITS:

HABITAT: Freshwater, bethnic, spring-spingbrook.

ELEVATION: 5,280 ft. (1,610 m).

PLANT COMMUNITY: Unknown.

POPULATION TRENDS: Unknown.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS, 1994]
[C2 USDI, FWS, 1991]

STATE STATUS: None

OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999)
Bureau of Land Management Sensitive (USDI, BLM AZ 2000, 2005, 2008)

MANAGEMENT FACTORS: **Threats:** highly restricted geographic distribution with associated potential for extinction due to chance events; water development and groundwater depletion. **Management needs:** protection of spring source; periodic monitoring of snail population and its habitat; research on ecology and systematics.

PROTECTIVE MEASURES TAKEN:

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: USFS - Prescott National Forest; Private.

SOURCES OF FURTHER INFORMATION

REFERENCES:

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Hershler, R. and W.F. Ponder. 1998. A Review of Morphological Characters of Hydrobioid Snails. Smithsonian Institution Press, Washington D.C.

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ADDITIONAL INFORMATION:

Revised: 1992-03-24 (DBI)
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